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SCIENCE.—SUPPLEMENT.

FRIDAY, JANUARY 29, 1886.

PROFESSOR LADD ON THE YALE CURRICULUM.

WE presented in *Science* (vi. p. 499) a synopsis of Professor Palmer's article on recent changes at Harvard. We now give an abstract of an article from the same journal, the *Andover review*, on the question of electives, etc., at New Haven, by Professor Ladd of Yale.

The new education, as brought to our notice afresh by Professor Palmer, claims to have discovered that the methods of education in vogue for centuries have been radically wrong: it has organized a college on a wholly new basis.

But the proposed scheme, though revolutionary, and seeming to contradict experience, does not the less merit consideration. Before placing our faith in it, however, we ask, What experience can it boast? What trial has it had at Harvard? We answer, A trial for two years; for only during that short period have youths in the first half of their university course been placed completely under the elective system; and it is to this extension of the system that opposition is chiefly made. More than a generation is necessary to prove the final outcome of such great changes. Is, then, the experience of a single university, during but a moiety of its course, to be considered as sufficient?

But we shall be glad to examine the arguments so well presented and so courteously urged by Professor Palmer, and to compare the tabulated results of the new with those of the older method. Harvard has been chosen as the only thorough representative of the new education; and it is fitting that Yale should be selected to compare with it, partly because, as a teacher there, I am best acquainted with it; and partly because it is the leading representative of more conservative tendencies in education.

But let me first state some points in which I agree with Professor Palmer. I, too, hold that the world of science and learning has greatly progressed of late, and that both the matter and method of education must therefore also change. Sciences and modern languages must be taught, and the ancient classics take a relatively lower place than formerly. But all the best institutions recognize and act on these facts and truths. Within twenty-five years, Yale has made such

progress that much of its education may be styled 'new.' Then, again, along with Professor Palmer, I would measure the success of education by high ethical standards. But do the statistics given show that the new education uplifts character as no other training can? We think we can show that they go rather to prove the contrary. We shall, then, take up, in the order that commends itself to us, the various points adduced by Professor Palmer.

It is urged, that, under the new education, the student's ideal of a 'gentleman' has been enlarged and elevated. Hazing, and such practices, are no longer 'good form' at Harvard. We answer, that it is even so at Yale, where a marked improvement in these regards has been going on for the past twenty-five years. Of other institutions also, to a certain extent, the same is true. The causes of this improvement are not owing to any peculiar method of education, but to the gradual amelioration of customs due to a higher civilization; to the different attitude assumed by parents and teachers towards the young; to wiser dealings with students on the part of college faculties; and, lastly, to the influence of well-regulated athletic sports in giving an outlet for the surplus vitality of the youth.

But it is claimed that the new education is very popular. The growth of Harvard under it has been very great, both in numbers and resources. But, we ask, has it received these generous gifts as tokens of approval of the elective system? Have not other colleges also received very bountiful gifts? During the last fourteen years, Yale has received, either from gifts or by bequest, more than two and a half millions, while its library has increased by eighty-three thousand volumes. Though this sum does not equal that received by Harvard during the same time, yet it tends to throw doubt on the prestige of the new education with the long purses of the country.

The increase of students certainly does show popular favor. We admit that the new education would be likely to be popular with youths of eighteen. But Yale, too, shows remarkable growth during the past twenty-five years. The average number of undergraduates has been as follows: 1861-65, 533; 1866-70, 610; 1871-75, 704; 1876-80, 745; 1880-84, 792. Besides, no other college has rejected so large a per cent of candidates for admission, or sent away so many for failing to keep up to its standard of scholarship.

We find, too, from the last statistics, that more than 55 per cent of the students at Harvard were from the state in which it is situated, while less than 32 per cent of the Yale undergraduates are from Connecticut. The new education is, at all events, not yet cosmopolitan.

Let us next compare Harvard and Yale in the very important point of attendance at college recitations, etc. Professor Palmer thinks it creditable to the members of the last senior class at Harvard that they 'had cared to stay away' at only 16 per cent of all the recitations. At Yale this term, for the seven weeks for which the record is complete, the freshman class showed but 3.7 per cent of absences. In this record are counted absences from all causes whatsoever: it includes the absence of one student through sickness for forty-eight days. The absences in the sophomore class were but a little more than 3.3 per cent. Moreover, all tardiness at a recitation beyond five minutes, and all egresses, count as absences; as does also presence at a recitation, while wishing to be excused from answering. Freshmen and sophomores are allowed but six absences during a term, to cover all such causes as sports, attention to friends, etc.; and yet they did not avail themselves of more than three-fourths of these absences. The junior and senior classes, which are allowed eight absences in a term, showed, during the period of seven weeks, an irregularity of 5.5 and 6 per cent respectively. We may add that the showing for the whole term would probably be better than for the first seven weeks of it.

We see, then, that the irregularity of the Harvard student is from a little less than three to five times as great as that of the average Yale student. The difference is surely very significant as showing the working of the two systems.

Alluding to the "charge of 'soft' courses," "which," he says, "is one of the stock objections to the elective system," Professor Palmer shows us what wise courses the juniors and seniors of Harvard choose. I regret that we are not told how the freshmen exercise their right of option. So far as I can judge, the choices of the Yale juniors and seniors display more taste for hard work than is the result under the new system. No course in classics or in the higher mathematics was a favorite with the two upper classes at Harvard in 1883-84, while 54 juniors and 181 seniors are reported in 'fine arts,' for this year. At Yale this term, however, 53 choices of courses in higher mathematics, and 179 in classics, have been made. The student who has been at regular hard work during his first two years, will be likely to enjoy it in his last two.

Another excellency ascribed by Professor Palmer to the new education is, that under its influence the standard of 'decent scholarship' is steadily rising. To prove this, he cites the marks received by the average Harvard student during the different years since 1874-75. We frankly state that we think such a criterion most unreliable. The students' marks are higher under the elective system, but largely because the teacher, as well as the pupil, is known by his marks; and many students choose their elective because of this fact. Under that system it would be a better test of a pupil's real merits to inquire what courses he takes under teachers that give hard work and low marks.

The new education is also credited with having effected an improvement in the spirit and work of the instructors themselves. We accept Professor Palmer's testimony as conclusive on this point. But in other colleges besides Harvard are to be found the spirit and method which he justly praises; and without them no one should be an instructor under any system. May not, also, a method that makes so much depend on the favor of those taught, develop methods of instruction not conducive to the highest efficiency?

I may remark here that I cannot share the personal experience of Professor Palmer, when he, on looking back upon his college days, feels that more than half of his studies should have been different. My studies at college were wholly prescribed, but they have been none the less of use to me on that account. They have taught me to work hard, and to do patiently every task set before me; and this I would not give for all to be gained from the elective courses of either Harvard or Yale.

But the real matter of disagreement between Professor Palmer and myself is, "why the elective system should be begun as early as the freshman year." This, he says, lack of room precludes him from discussing; adding, "and it hardly needs proving." But here, in my opinion, he is wrong. Yale, with many other colleges, allows much choice to students in their last two years; juniors elect eight-fifteenths, and seniors four-fifths, of their studies. No choice, except that between French and German, is permitted in the first two years. Why, then, am I opposed to the extension given to the elective system at Harvard? Why draw the line between sophomores and juniors, rather than at the entrance upon the freshman year? Why prescribe any courses for the last two years?

The question is simply one of drawing lines. We think, that, after two years' drill at college, the youth can more wisely select his studies than at entrance. Professor Palmer thinks that the

choice should be made all at once, and that at the time when the boy leaves home; that from that time onward he should have the entire decision. We hold, on the contrary, that he should first develop somewhat in his new surroundings, learn better how to study, and what the different courses are, before he has the grave task of deciding. Moreover, a headlong plunge into freedom is not a good thing. I still think, also, that an educated man should enjoy a good training in the five great branches of human knowledge, — in mathematics; in language, including literature; in physical science; in the history of his race; in philosophy. Because, then, I do not think that the new education draws the line in the right place, I am opposed to its extreme measures.

One argument of Professor Palmer hardly admits of statistics. He thinks the type of manliness at Harvard higher than that to be found at colleges that have not so fully adopted the elective system. I reply, that I do not believe the men at Yale yield in manliness to those of any college.

My ideal of cultured manliness in the undergraduate agrees with that of Professor Palmer: as to how best to realize it, we differ. In my opinion, he gives too little weight to the great ethical law of habit, and to the value of the pressure of immediate necessity. We want to train the young to choose right spontaneously, but none of us live solely under the influence of high and remote ideals. Under a system of education, which kindly but firmly invites men to 'choose right,' in view of consequences that come closely home to them, the best characters will be formed.

Having now pretty fully traversed the ground of Professor Palmer's arguments from experience, I wish, in closing, to express, on behalf of the majority of educationists, the fears — honest and strong fears — which they feel as to the ultimate results of the new education.

We fear that the new education will increase the tendency to shallowness, already great enough in American student life. We have already too much smattering of many knowledges. The chief remedy must be to pursue certain topics with persistence and thoroughness. If the average American boy, on entering college, had had the discipline afforded by the drill of a German gymnasium, he might more safely judge for himself. Two years more of continued study of certain prescribed subjects — whatever these may be — is certainly little enough to require of him.

We are afraid of the effects of the new education on the academies of the country. They have been gradually improving under the increased requirements of the colleges; but how shall they meet the demands made by boys, who, under the

new education, may enter college in so many different ways? What interest, also, will boys take in mathematics and the ancient classics, when these are liable to be abandoned so soon as they have attained free election?

We are afraid of the effects of the new education on the higher education of the country, which has been constantly rising for years. The new methods, in themselves considered, are better than the old: and the new learning and science are, of course, far richer than those of the past. But, in order to introduce these, is it necessary to take the direct control from the older and wiser, and leave it to the choice of the inexperienced? Such a course will, in certain lines, destroy all connected and steady discipline in higher education.

Finally, in spite of Professor Palmer's arguments, we are afraid of the effects of the new education on the character of the youth.

We think we have shown, that in every respect, except that of securing \$175,000 instead of \$250,000 a year, and of making a smaller percentage of annual gain in numbers, the results of the system in vogue at Yale are equal or superior to those at Harvard. We need much more light, both from reason and observation, before preferring the new education to one which is, in our judgment, wiser, though both new and old.

THE LEVELLING OF SIBERIA.

THE publication of the results of the Siberian levelling, the largest of the kind yet made, is at last ended. The survey originated in the Imperial Russian geographical society, which petitioned the Russian government to grant the necessary means, setting forth the want of an accurate knowledge of the height above sea-level of a great part of Siberia. The preliminary results were known in 1878, and gave a much greater height for Lake Baikal than was expected. The detailed calculations were delayed from different reasons, among which were the long illness and death of Mr. Moschkow, to whom was intrusted the greater part of the work. It was afterwards given to W. Fuss, who ended it. The whole length of the levelling from Zwerigowskaja on the Tobol to Lake Baikal is 3087.1 versts (2,040 English statute miles). Unfortunately the starting-point is not connected by levelling with the Black or Baltic seas, but by triangulation only, so that an uncertainty of perhaps thirty or even forty feet remains. The results are shown in the accompanying profile.

Gen. A. Tillo has the direction of different levellings under the ministry of public works. In 1884 the mean level of Lake Ladoga over the Gulf of Finland was determined, and found to be 16.3